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EXPERIMENTAL RESEARCH FACILITY  
FOR USE BY  
THE INTELLIGENCE COMMUNITY

WORKING PAPER

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Experimental Research Facility  
For Use by the Intelligence Community

I. Introduction

An experimental research facility will be established for use by the intelligence community in response to the need expressed by the PFIAB for improved intelligence information handling. This facility will place a new and increased emphasis on experimental development, testing, and evaluation of information handling. This increased emphasis will be accomplished through cooperation in the intelligence community, with the centers of excellence located in the intelligence agencies/departments. These centers of excellence will use this experimental research facility for improved information handling in the intelligence community on a long range basis.

Some of the attributes of this facility are to provide (1) for building, testing, and evaluating a next generation information system, (2) for a cooperative effort in intelligence information handling, (3) an improved information handling system for operational use, and (4) "prototyping" the improved information handling system as an experimental research facility. The solution environment will use readily available hardware and software, wherever possible, to provide an operational solution for handling of substantive intelligence on the basis of using an integrated intelligence data base.

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## II. Concept of Experimental Development

This experimental research facility will consist of an experimental computer-communications network for use in the intelligence community in the Washington, D. C. area. This facility and related contractual support will be funded by ARPA during the experimental design, development, testing and evaluation until the facility becomes fully operational for productional type of use. When the facility has become operational for productional use, the computer-communications equipment will be transferred to the member agencies/departments of the intelligence community and the system coordination will be transferred to the DCI.

The computer-communications system will be developed with three computer complexes. The major computer complexes will be located at CIA, DIA, and NSA, and will be identical to the extent that the same software can be used at any of the computer complexes. The system and its data base will be developed during the experimental phase with participation by the total intelligence community. The developmental atmosphere will be similar to Project MAC. The equipment will be funded by ARPA with cooperative participation in the experimental development and use of the system and its data bases by employees of the intelligence community. For example, a typical participating intelligence employee may be working at CIA, DIA, or NSA, and

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be devoting part-time in a joint appointment to this project. (This is similar to a joint appointment of a professor to the Department of Mathematics and the Department of Computer Science.) The end-product of this cooperation and participation would be a computer-communication network system designed and built with participation of the intelligence community employees for operational use by the intelligence community on a continuing basis.

The work environment associated with this experimental research facility will be that of a strengthened commitment to in-house developmental efforts on a cooperative intelligence basis. ARPA will provide funding for some initial studies, rental/purchasing of the computer-communications hardware and software, and 40% of the cost of building large community data bases. The individual agencies/departments will participate in the various studies/committees, provide all personnel for operation and management of this facility, and pay for 60% of the cost of building large community data bases.

### III. Technical Approach

Each agency (DIA, CIA, and NSA) will provide 30 fulltime persons for experimentation, research and development, management, and operation of these facilities; and an unspecified number of persons in the use of these experimental facilities. Each agency will cooperate in providing the substantive intelligence

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for construction of the data base, assist in design and development of the computer-communications system, and participate in the continued cooperative operation of this facility for long term use by the intelligence community.

The experimental research facility and its program will be managed by the Director, ARPA. The management structure for this facility is shown in the attached chart. An ARPA project office will be established with two persons (one from DOD and CIA each) for this purpose. A Board of Directors, comprised of one person from each NSA, DIA, and CIA will provide advice and guidance to the Director, ARPA. The full-time daily management of the computer-communications facilities will be performed by the current COINS Manager and his staff. The full-time daily management of the experimental intelligence services will be the responsibility of the Project Office. When this facility becomes fully operational, the coordination of the operation of the system will be performed by the DCI.

The communications for this facility will be the communication services that will be available as described

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The COINS Experiment will be kept operational and provide continued service to the user/analyst until an equivalent or better service is available.

The technical problems to be addressed in this experimental research facility consists of improved intelligence information handling in a distributed data base in a distributed computer-communications network. The technical criteria to be addressed

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is the application of improved information handling techniques to intelligence information handling. Experimental efforts will be devoted to large file handling; multi-source inputting from many collectors; structuring of large files for quick input, updating, and retrieval; correlation of output information from multiple files; interactive graphical techniques for use with large data bases; and other similar techniques in support of enhanced use by the intelligence user/analyst.

The substantive intelligence to be included in this system consist of (1) the information contained in the files in the COINS Experiment, (2) all-source intelligence related to the Communist offensive and defensive missiles, (3) all-source intelligence relating to the military capabilities of the Soviet and Bloc countries, and (4) all-source intelligence related to the Middle East crisis. The operational problems to be addressed are those problems in making the above-listed intelligence available to potential end-product users in as nearly real time as possible in this resource sharing network. The emphasis will be placed on user involvement to enhance the user acceptance of the operational end-product intelligence. The priorities to be assigned to the last three areas of substantive intelligence mentioned above will be determined after problem definition and analysis to be performed with the support of a contractor. This problem definition and analysis period will ~~will~~ last for three months and will use two persons with the appropriate security clearances needed to visit the desired portions of the intelligence community. The problem definition and analysis study will be performed in early FY71.

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two contract persons with the appropriate security clearances needed to visit the desired portions of the intelligence community. The problem definition and analysis study will be performed in early FY71.

#### IV. Implementation Plan

##### Phase 0

The experimental research facility will be designed using the benefits of the considerable experience obtained from the COINS Experiment, and the experience obtained from the IHC/USIB and its support staff.

The system studies being performed in the COINS Experiment will be completed in FY71 and will provide valuable input to the design of this facility. The system studies are being performed in:

1. User languages and data base management systems
2. Remote terminals and character set
3. Communications configuration
4. Software security
5. Security labels
6. Computers and communications interface

The existing efforts throughout the community in examining and determining what information and information handling services are needed by the potential users will be a valuable input to the design and development of this facility. The existing efforts in building further data bases will provide further

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guidance for continued data base and file building in the experimental research facility.

A high priority in the early phases of this effort will be to obtain an operational capability on readily available hardware from the manufacturer. Therefore it will be necessary to rent the hardware equipments, initially, with the option to purchase. The hardware will be purchased in the latter phases of this project, as funding becomes available.

#### Phase I

In phase I (FY71), funding will be provided to perform studies on (1) operating and executive systems, including scheduling algorithms and priority systems, and (2) the configuration of the computer-communications system for the experimental research facility. These two studies will be funded by ARPA. The results of the six on-going COINS system studies will be a valuable input to these two studies. The intelligence community will participate in these studies, and provide continued input to assure that the experimental research facility will fulfill their long range needs in information handling.

A contractor-assisted study will be performed in early FY71 on problem definition and analysis, to assist in assessment of priorities in the construction of the three new data bases, not in the COINS Experiment. This study will require assistance

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from two contractual persons for a duration of three months, in addition to the cooperation of the intelligence community.

Before the end of phase I, specifications for the system hardware and software<sup>t</sup> will be published. These specifications will be based on the experience from the COINS Experiment, the results of the three months study, and recommended specifications as submitted for this facility by the Director, CIA, Director, DIA, and Director, NSA.

Funding for phase I (FY71) by ARPA will be  with 25X all funds not devoted to the study efforts, used to obtain some initial facilities or software. 

#### Phase II

Phase II will be accomplished in FY72 and will consist of:

1. Design(as required at a minimum) and installation of the supervisory and operating systems, and applications software. This will be a joint effort of the intelligence community and a contractual effort, which is expected to continue into other phases.
2. Installation of the initial hardware complex.
3. Establishment of an initial operational capability on the experimental research facility.
4. Begin efforts on transfer of data bases to this facility, and construction of further data bases on this facility.

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ARPA will provide six million dollars for facilities and contracts during phase II. Each agency (DIA, CIA, and NSA) will provide a dedicated staff of 30 persons, an unspecified number of part-time cooperative staff, and 60% of cost of data base construction. The dedicated staff will include 10 intelligence function specialists and 20 persons to serve as managers, computer operators, computer scientists, and information scientists.

### Phase III

Phase III will be accomplished in FY73 and FY74 and will consist of:

1. Continued efforts in building of data bases.
2. Experimentation in improved information handling techniques.
3. Addition of further hardware, software, and communications equipment to accommodate the increased workload and to provide for system improvements.
4. Continual evaluation, improvement, and upgrading of this facility for enhancement of user/analyst acceptance.

25X1 ARPA will provide [ ] for facilities and contracts in the above efforts, at the rate of [ ] per year. The commitment by each agency will remain at the same level as in

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phase II.

Phase IV

Phase IV will be accomplished in FY75 and will consist of:

1. Further continuation of the tasks in phase III.
2. Design of test and evaluation plans and procedures for testing and evaluation of this facility, similar to the evaluation of Project PACER.
3. Conducting a three month test and evaluation of this facility and writing a final report.

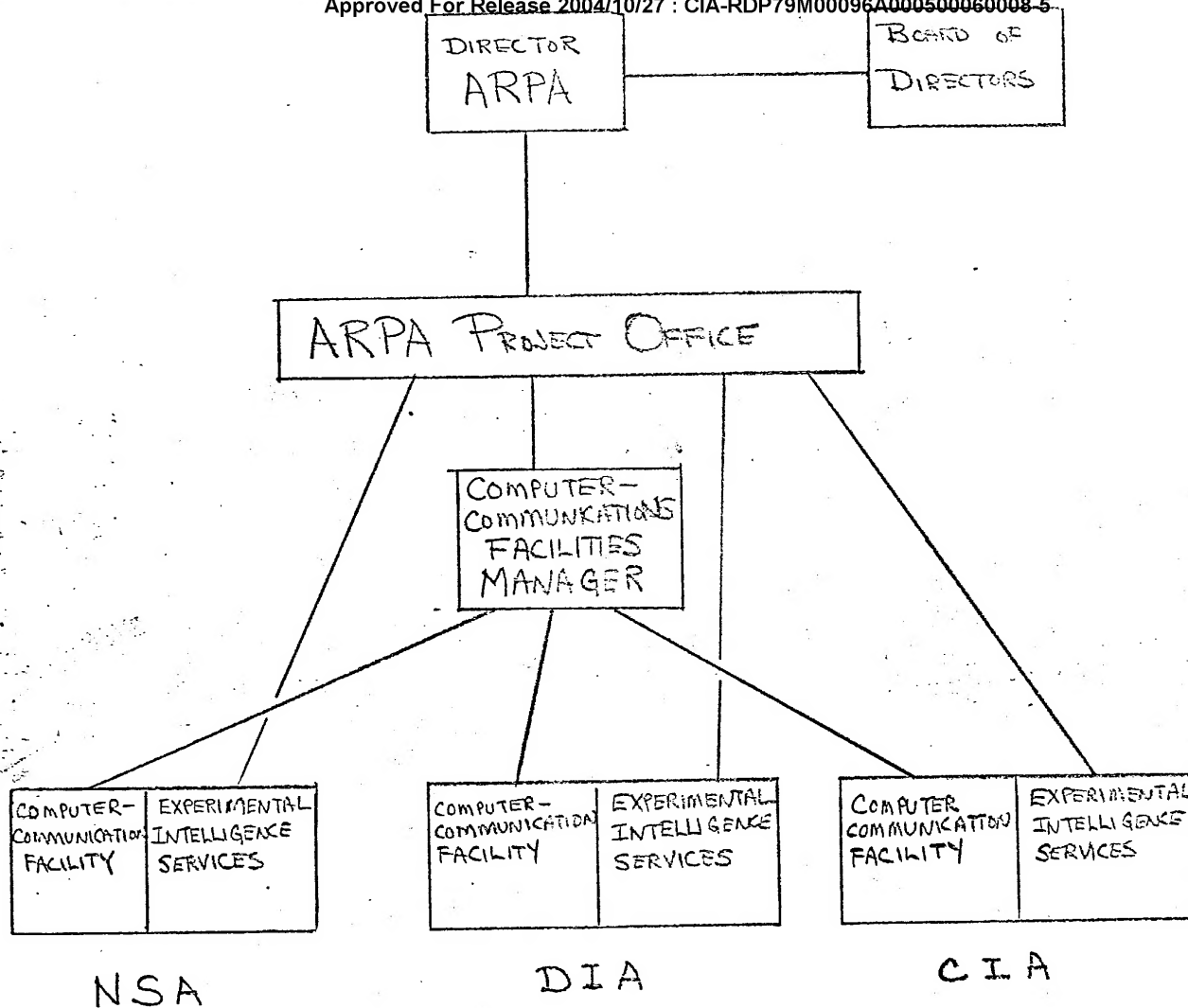
25X1 ARPA will provide  for the tasks list in phase IV.

The commitment by each participating agency will remain at the same level as specified in phase II and III.

V. ARPA Funding



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